



KAIPATIKI PROJECT ENVIRONMENT CENTRE PROJECT ANALYSIS



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Report Version 1.1

Carl Douglas, Yosop Ryoo and Michael Davis, January 2011

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SECTION 1 **THE KAIPATIKI PROJECT**

The Kaipatiki Project is a community-based organisation providing environmental education and bush restoration services, located on Auckland's North Shore. The project currently operates out of small suburban site adjacent to the Eskdale Bush Scenic Reserve, but intends to build a new Environment Centre on a site at the top of Birkenhead Domain, on Glenfield Road, and are currently lobbying Council to this end.

The Kaipatiki Project vision is 'Inspiring communities to live sustainably'. The main objectives of the project are:

- ▶ To restore the bush reserves of the North Shore, with particular focus on the Eskdale Reserve, for the enjoyment and benefit of the community.
- ▶ To educate young and old to help raise awareness and encourage behaviour change towards environmental sustainability.

Although much of its work involves plants and the environment, the Kaipatiki Project is about people, first and foremost: building a community that connects people to one another through a sustainable relationship to their environment.

Their values and beliefs are:

- ▶ Development and building of the community goes hand in hand with ecological restoration.
- ▶ Act sustainably in every area of operations.
- ▶ Practice responsibility and ownership of the local environment.
- ▶ Work holistically.
- ▶ A healthy environment is necessary for a healthy community.

The Kaipatiki Project is a volunteer-based, not-for-profit organisation. It is funded by contributions from the Council, Government, the ASB Community Trust, contracts, donations, grants, and sales. It is managed by a board of volunteers, who appoint permanent and part-time staff, including a Manager, Project Manager, Schools Co-ordinator, and Administrator.

Information on the Kaipatiki Project and its programmes can be found online at <http://kaipatiki.org.nz>

Nature for Neighbourhoods

Free on-site consultations and expert advice for Auckland residents with a stream and/or native bush on or near their property.

Nursery Bites

Learn to eco-source seeds from the forest and turn them into thriving native trees, shrubs, and grasses ready to be planted back into reserves.

Film Screenings

Public viewings of films about sustainability and environmental care.

Create your own Eden

Free composting, worm-farming and Bokashi courses across Auckland to assist people in minimising their waste.

Summer Strolls

Guided walks through reserves.

Healthy Child, Healthy Planet

Preschool playgroup and parent course

School Visits

Going into schools to teach students about recycling, waste, worm-farming and sustainability.

Resources on Sustainable Living

Information on waste minimisation, stormwater, pollution, mangroves, pests and predators, flora and fauna, noxious weeds, and plant propagation

EDUCATE PROGRAMMES RUNNING 2011

The Kaipatiki Project run a range of programmes aimed at helping people to relate constructively and sustainably with the local environment. These programmes are constantly changing, and the new Environment Centre will allow for new types of programmes.

Weeding and Pest Control

Weeding and mulching to control noxious plants; and trapping of possums, stoats, and other pests.

Monitoring water quality

Testing and improving the quality of the water in the Kaipatiki stream, which contributes to overall harbour health.

Planting

Eco-sourcing seeds and re-planting local reserves with native plants. Over 10 000 plants returned to reserves in 2010. Creating habitat for native insects and birds.

Nursery

Growing 15 000 native plants sourced from the seed of local trees.

RESTORE ONGOING OPERATIONS

The Kaipatiki Project, working through groups of volunteers, maintains and restores the native bush in the Kaipatiki Stream catchment, and other local reserves. Over 600 volunteers contributed their time between July 2009 and June 2010, through corporate and community groups.

OBJECTIVES FOR NEW ENVIRONMENT CENTRE

The new Environment Centre will:

Generate opportunities for people to understand and participate in maintaining their local environment

- ▶ by making a statement about sustainability.
- ▶ by increasing awareness of local environmental conditions: the things under our feet and in our back yards.
- ▶ by providing a gateway into the reserve.

Allow upsizing and diversifying of Kaipatiki Project operations

- ▶ by raising the public profile of the Kaipatiki Project.
- ▶ by providing more nursery and workshop space.
- ▶ by providing more teaching and meeting space.
- ▶ by providing more public community space.

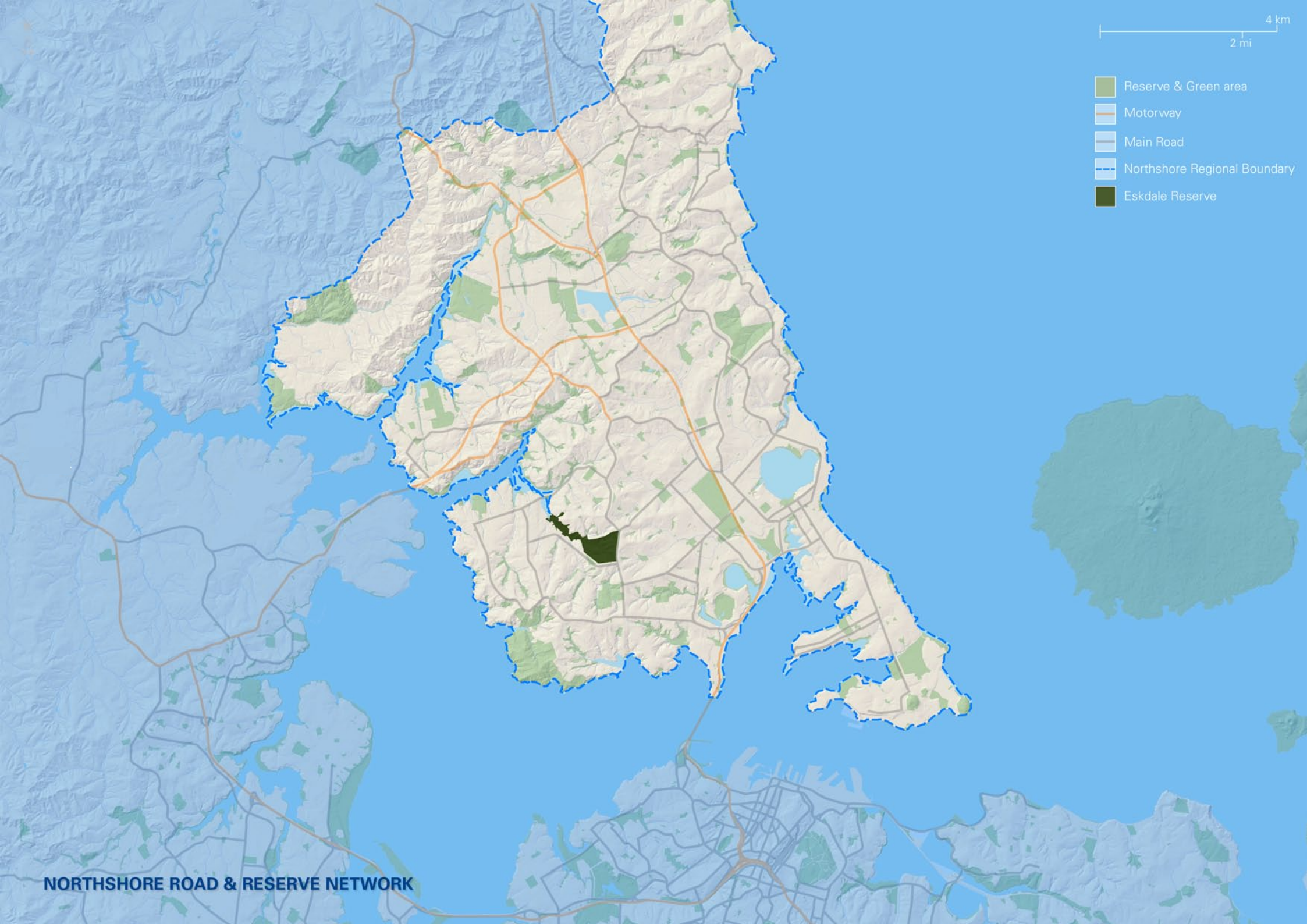
Provide a collaborative hub for other community groups

- ▶ by providing shared workspace, meeting spaces, and equipment
- ▶ helping fund Kaipatiki Project's operations by providing income through office rent.

Be 'world class'

- ▶ showcasing innovative and sustainable building

SECTION 2 **SITE**










4 km
2 mi

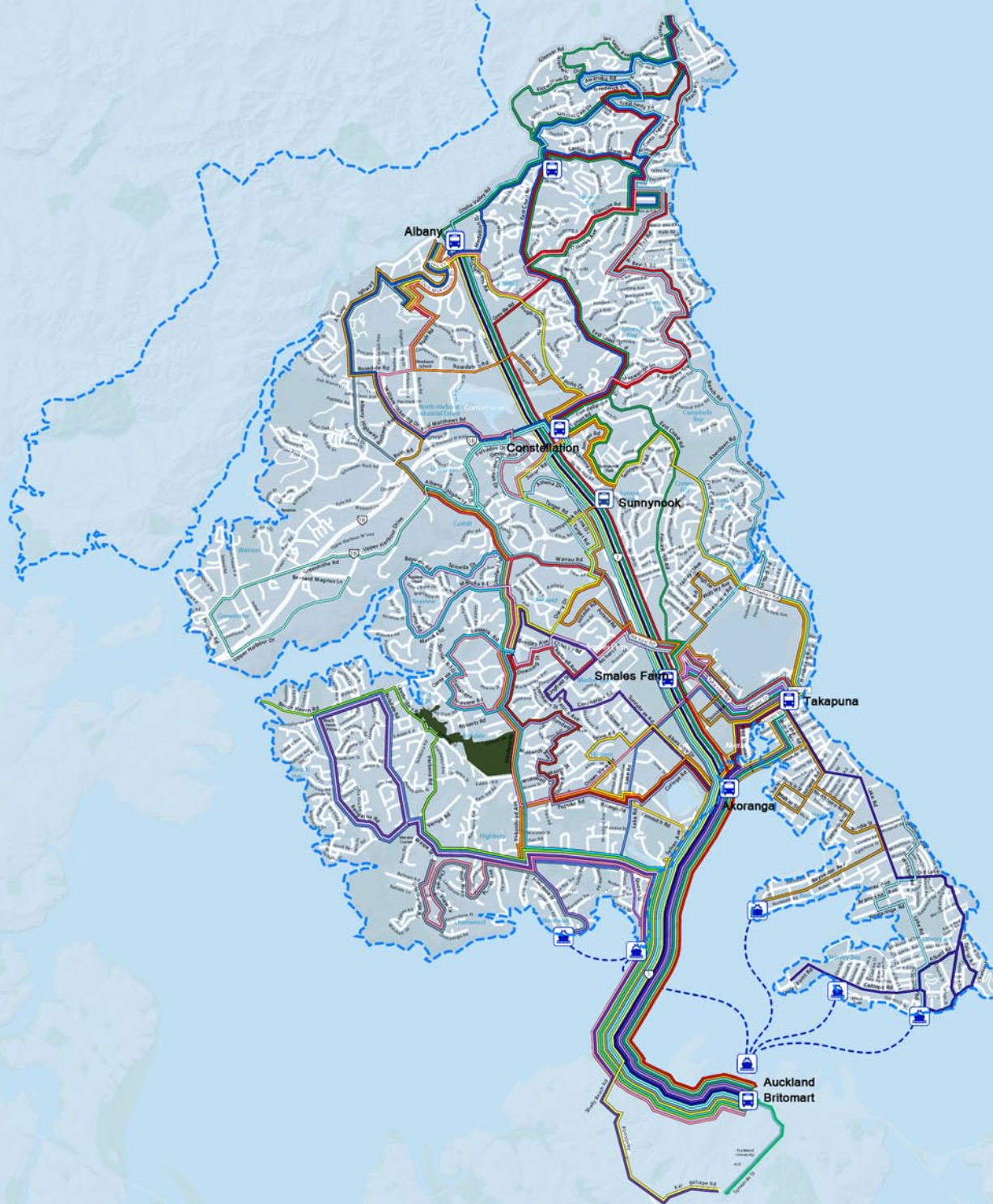
- Reserve & Green area
- Motorway
- Main Road
- Northshore Regional Boundary
- Eskdale Reserve

NORTHSHORE ROAD & RESERVE NETWORK



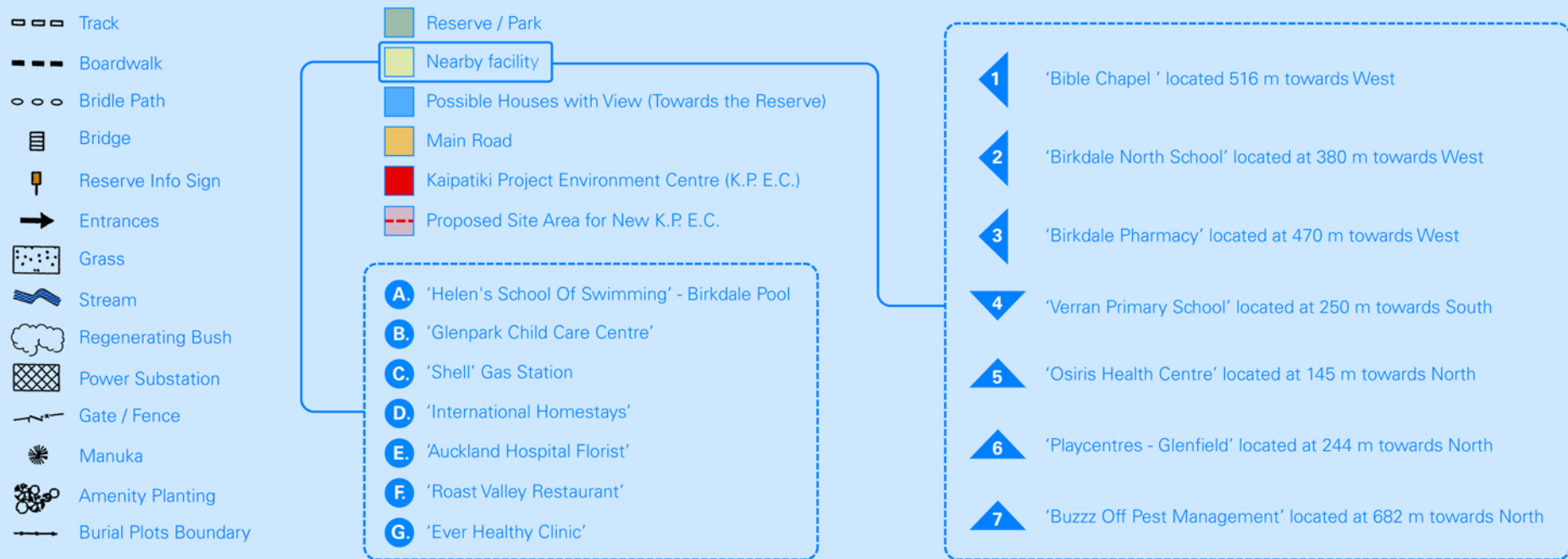
4 km
2 mi

-  Bus Station
-  Wharf
-  Road
-  Bus Routes
-  Ferry Route
-  Eskdale Reserve
-  Northshore Regional Boundary





ESKDALE RESERVE NETWORK - KEYS & SYMBOLS



PERSPECTIVE: a. (View down towards the 'Proposed Site Area' from Glenfield Road.)



PERSPECTIVE: b. (View up towards the Glenfield Road from 'Proposed Site Area'.)



PERSPECTIVE: d. (View towards the Auckland City Central & Rangitoto Island from Speedy Cres. 78m east)



PERSPECTIVE: c. (View down towards the Eskdale Reserve from Eskdale Road.)





**Auckland
Council**
Te Kaunihera o Tāmaki Makaurau



ESKDALE RESERVE

0 50 100 200 Meters

WASTE WATER PIPELINE NETWORK



STORM WATER PIPELINE NETWORK



WATER SUPPLY PIPELINE NETWORK



-  Reserve / Park
-  Nearby facility
-  Waste water Manhole
-  Waste water Public line
-  Storm Water Manhole
-  Storm Water Public line
-  Water Supply Manhole
-  Water Supply Public line

UNDERGROUND PIPELINE NETWORKS

0 50 100 200 Meters

N



PHYSICAL CHARACTERISTICS [Information retrieved from 1990's 'Management Plan for Eskdale Reserve' & 'Kaipatiki Stream Assessment Report No. KC13']

General

The Eskdale Reserve Network comprises a contiguous tract of bush extending over some 63 hectares of land. The upper part of the reserve (the 'square' area) has extending in a north east to south west direction. Adjoining the square area is a steep, attenuated stream valley of which the reserve occupies the mid-slop section. The western end of this valley discharges stormwater from the Eskdale Catchment (total contributory area of around 392 ha) into the upper reaches of the Kaipatiki Creek.

The reserves encompass a range of natural habitat types. However these have been seriously degraded by past land management practices which have resulted in loss of natural vegetation and heavy weed infestation.

Eskdale Reserve Network is one of the largest reserve areas on the North Shore. This, coupled with the 'square' shape of the upper part, gives the reserve a small boundary to area ratio with a resistance to outside disturbances. For these reasons the reserve is very special, and this plan should seek to maximise the advantages afforded by these qualities through effective maintenance and restoration.

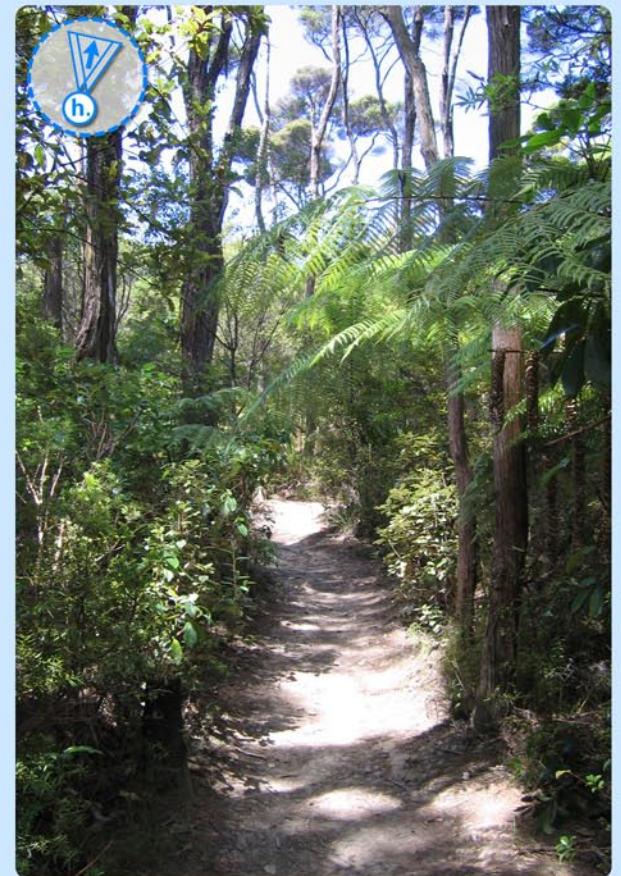
PERSPECTIVE: e.



PERSPECTIVE: f.



PERSPECTIVE: g.



Climate

Auckland meteorological observations provide data on the climate in the general locality. Observations made 4km south of the reserve between 1990 and 1996 show that locality is characterised by moderately high rainfall (mean rainfall is 1327.8mm and the mean number wet days is 157), warm temperatures and relative humidity (the mean daily air temperature is 15.2 degrees Celsius; the mean of 9am relative humidity is 83.1%). The bush reserve however is made up of several microclimates created by topography and vegetation. For instance, the floor of the valley where important dense cover provides the damp, shaded conditions necessary for several fern species to thrive. Preservation of these microclimates and therefore natural habitats is an issue.

Geology and Soils

New Zealand Geological Survey records indicate that the geology of the Eskdale catchment, including the Eskdale Reserve Network, comprises interbedded sandstones and siltstones of the Waitemata Formation. Once weathered, these rocks form silty and clayey silts that are of high plasticity. Such soils tend to have poor soakage abilities, with relatively high runoff volumes.

In terms of fertility, the quality of soils differs according to the forests that originally covered them. Under kauri, rimu and podocarp forests, soils were formed with lower fertility, having grayish topsoils and yellowish subsoils that are harsh, nutty or blocky, and well leached of nutrients. Yellow-brown earths forming podsoles (infertile forest soils usually acidic) are characterised where kauri and rimu have been inefficient in returning nutrients to the soil.

Ecology

Recent international concepts recognise the value of natural ecosystems in terms of the 'systems' that they provide for human society (Costanza et al., 1997; Daily, 1997). This reserve, as an area of contiguous vegetation, is providing essential 'ecosystem services' to the local area and indeed the greater Auckland region. Many of the services are those that have been diminished through urbanisation, but it must be recognised that they are still necessary to an urban environment. Examples of ecosystem services being provided by Eskdale Reserve Network are:

- Water/erosion control: Catchment drains to Waitemata Harbour, so the retention of soils is essential.
- Gas regulation: The vegetation is essential to the atmospheric CO₂/O₂ balance ('urban lung')
- Pollination: The reserve provides pollinators for the propagation of a plant population.
- Nutrient recycling: All biogeochemical cycles are represented within the reserve.
- Refuge for indigenous species: Acts as a habitat for both resident and transient populations. Bird in particular visit local gardens but are dependent on the reserve for nesting sites.
- Recreation: Provides opportunities for passive recreation.
- Cultural: Provides opportunities for appreciation of aesthetic, educational and scientific values.

Vegetation

Plant communities:

The Eskdale Reserve Network is an area where kauri-podocarp-broadleaf forest, a lowland forest composition typical of the North Shore, once flourished before being milled. In parts, namely the ridges where it is much drier, the floor plan associations are still very much in evidence. Along the course of the stream, wetland species exist, and in places there are raupo swamps.

In 1975, the Department of Land Survey (DLS) undertook a botanical survey which identified 7 main habitat types in the Eskdale Bush Reserve. While this information is dated, it provides a useful inventory by which to monitor change when future surveys are conducted. The habitats identified are:

- Secondary broadleaf forest on steeper parts near streams, principally mahoe, tawa, lancewood, towai, rewarewa and mamaku. Karaka and kohekohe populations are increasing. Some older puriri, taraire and miro exist.
- Kanuka with scattered emergent kauri and tanekaha. Also present are saplings of kauri, tanekaha, miro, rimu, kahikatea and totara. There are a few small matai.
- Kauri and podocarp over kanuka
- Young conifer forest. Mixture of several species: kauri, miro, tanekaha, totara, kahikatea and rimu.
- Young kahikatea forest by stream
- Manuka following the last burn in the area
- Blackberry in 1975 (later cleared and planted)



Kanuka



Karaka



Kauri



Kohekohe



Kahikatea



Lancewood



Mahoe



Mamaku



Matai



Miro



Puriri



Blackberry



Rewarewa



Rimu



Taraire



Tanekaha



Twak



Totara

Plant pests (weeds)

Weeds dominate some areas of the reserve network. Species of greatest concern include pine, wandering jew, climbing asparagus, ginger, and Taiwan Cherry. The source of weeds is primarily animal vectors such as birds, and garden escapees from adjoining properties. The latter source is more of a problem in the narrow sections of the proportion of the reserve that is subject to 'edge effects' and notably weed intrusion.

Of particular concern is the large number of pine trees present in the Birkenhead Domain. Due to their presence, the native species are being deprived of nourishment in an already deprived area. The seedlings are only able to make very slow progress and only certain species will tolerate growing in pine needles, e.g. five finger, red matipo and pittosporum tenuifolium to name the main ones.

Also, the pine trees maintain an open understory that allows a large blackbird population to forge. Ornithologist, Mel Galbraith, believes that blackbirds are the principle vector in spreading many of the fruit-bearing weed species.

Fauna

Native Fauna

Indigenous bird species present are those common in most North Shore reserves – others are seasonal or occasional visitors, for example, kaka and shining cuckoo. There are also introduced bird species that add variety to the species list, for example rosella and Malay spotted dove.

Other fauna

Very little is known of the microfauna of urban reserves. Within the Eskdale Reserve Network, the forest gecko (*Hoplodactylus granulates*) and green tree gecko (*Naultinus elegans*) are known to be present.

Animal pests

It is certain that introduced mammalian predators, especially rodents and possums, and probably also domestic and feral cats, are having an impact on the biology of the reserve. However the prospects for controlling these pests are good due to the reserves being almost encircled by principle roads, effectively enclosing the valley system. This offers a significant opportunity for predator control, with reduced rates of re-invasion.



Kaka



Malaysia Spotted Dove



Green tree gecko



Shining Cuckoo



Rosella



Forest gecko



Possums (Pest)



Weasles (Pest)



Rats (Pest)

Kaipatiki Stream

General Description of the Kaipatiki Stream Catchment:

The Kaipatiki Stream is in the mid-western part of North Shore City. The Kaipatiki Stream is 6.5 kilometres long with a contributing catchment of approximately 200 hectares. The Kaipatiki Stream flows east-west and discharges into the Kaipatiki Creek arm of Hellyers Creek which in turn discharges to the upper Waitemata Harbour. All major tributaries of the Kaipatiki Stream have been numbered to allow easy reference. These numbers are shown on all maps in this report. The area to the east of Tributary 6 is referred to as the upper catchment, the area to the west is referred to as the lower catchment.

Vegetation:

The amount of vegetation in a catchment can have a significant influence on the quality of a stream. Catchment vegetation may attenuate flooding, reduce peak flows and increase low flows in streams and provide treatment of contaminants. Retaining greater than 30% catchment vegetation may ensure the protection of in-stream values.

Geology and Soils:

The Kaipatiki Stream Stormwater Catchment Management Plan states that the surficial geology of the Kaipatiki Stream catchment comprises interbedded sandstones and siltstones of the Waitemata Formation.

Once weathered, these rocks form silty clay and clayey silt soils. Such soils are characterised by low permeability, high plasticity, high shrinkage and high winter groundwater levels. As a consequence these soils tend to have poor soakage abilities with relatively high runoff volumes.

Topography of Catchment:

The topography of the Kaipatiki Stream catchment can be generally described as steeply graded. The northern part of the catchment is the steepest rising to over 90 metres in elevation. To the southeast, the Tributary 5 sub-catchment encompasses a large portion of the total catchment area and rises in a more gentle manner to approximately 90 metres in elevation also. The eastern part of the catchment in which the headwaters of the main channel lie, has a maximum elevation of 80 metres.

Physical Characteristics of the Kaipatiki Stream:

Table 00 details the physical characteristics of the Kaipatiki Stream.

Tributary No.	Average Wetted Width	Range Wetted Width	Average Depth	Bank Height	Bank Angle (Average Both Banks)
Main Channel - Lower	2.5m	0.5m-4m	0.3m	1.4m	40°
Main Channel - Upper	1.6m	0.8m-2m	0.2m	1.2m	48°
1	0.5m	0.5m	0.1m	0.5m	25°
2	0.3m	0.3m	0.1m	0.1m	60°
3	1m	1m	0.1m	3m	60°
4	0.7m	0.5m-1.2m	0.2m	0.2m	25°
4A	0.8m	0.8m	0.1m	0.2m	15°
5	0.6m	0.3m-0.9m	0.1m	0.2m	20°
5A	0.8m	0.8m	0.1m	0.3m	5°
5B	0.8m	0.8m	0.1m	0.2m	65°
6	0.3m	0.3m	0.0m	1.5m	20°
7	0.6m	0.6m	0.1m	1m	35°
8	0.3m	0.3m	0.0m	0.3m	43°
9	1m	1m	0.1m	0.5m	43°
10	0.4m	0.4m	0.1m	0.7m	33°

Table 00:

Stream Cross Sections:

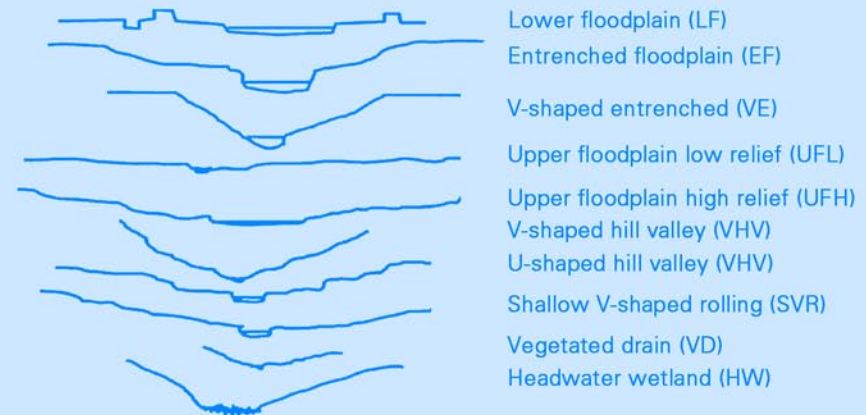
The following 10 cross sectional classes have been used to describe the physical morphology of streams on the North Shore. These cross sectional classes are used to aid in the identification of features such as wetlands and floodplains. Each class has different physical attributes associated with it. For example wetlands and floodplains will have greater bank stability than a v shape entrenched stream.

Imperviousness:

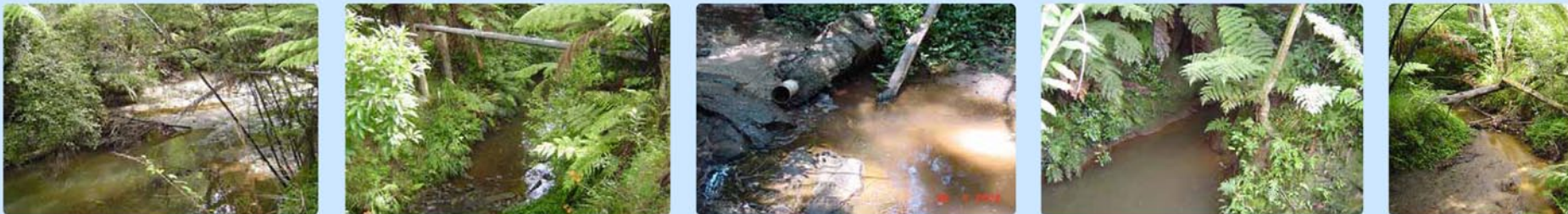
Impervious surfaces such as roads, roofs and car parks are an unavoidable feature of urbanised catchments. Associated drainage systems rapidly transport rainwater run-off into waterways, leading to a reduction of infiltration into groundwater systems. This reduces groundwater levels and lowers the base flow conditions in urbanised streams (some of which

can occasionally dry up) and increases flood peaks. These peaks can dislodge organisms and also cause erosion and movement of the stream bed and banks. Water running off hot impervious areas (such as roads and concrete) can have elevated temperatures. These waters can elevate the temperature of the stream to which they discharge. The combination of the above conditions can have major effects on stream communities. A number of studies have suggested that with as little as 15% of the catchment in impervious area can have deleterious effects on a stream community.

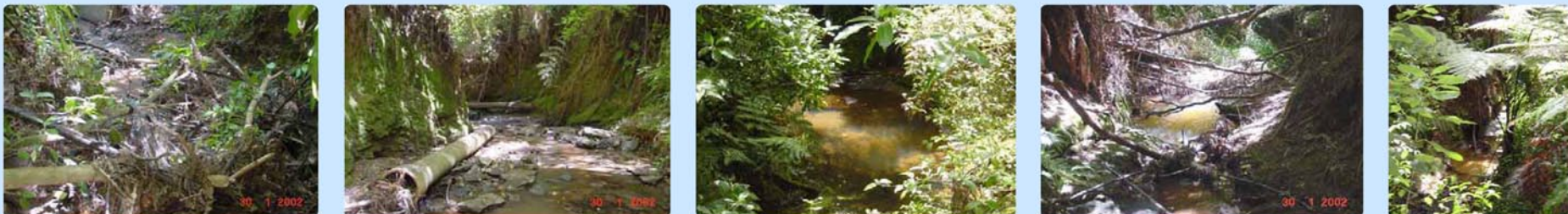
North Shore City Council undertook an assessment of all impermeable areas of the city in 2000 and at the time, 37% of the Kaipatiki Stream catchment was covered with impervious surfaces.



Pics of the 'Main Channel Lower':



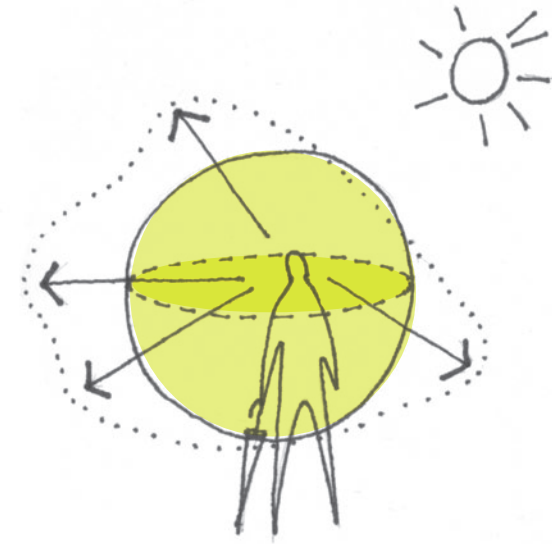
Pics fo the 'Main Channel Upper':





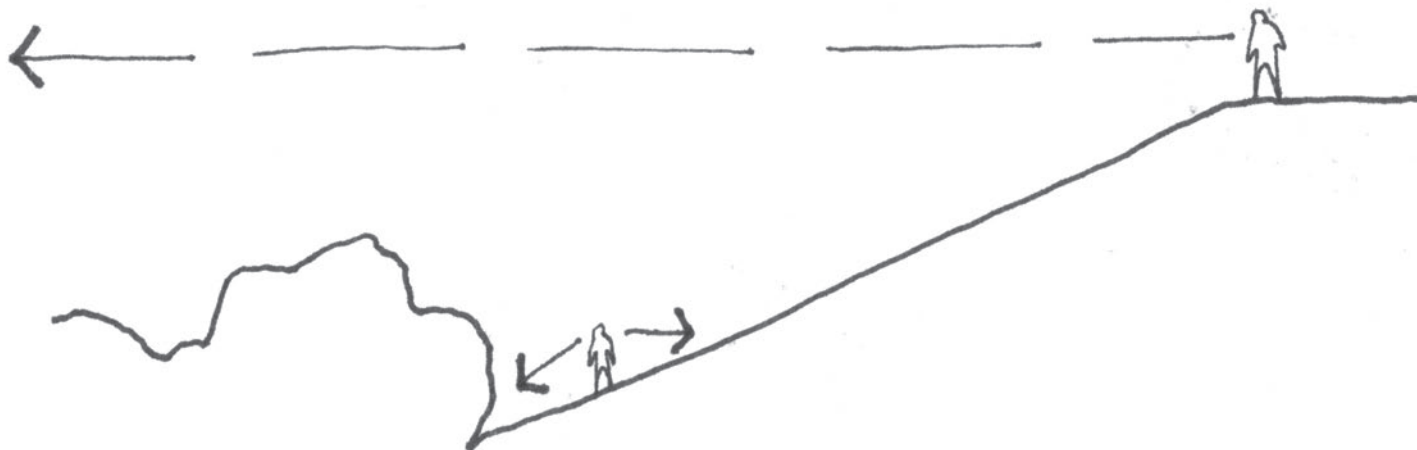
CLOSE SENSORY HORIZON

Intimate experience of being embedded in an environment



DISTANT SENSORY HORIZON

Expansive experience of being connected to a larger context



HISTORY OF USE AND DEVELOPMENT 1900-1992

From 'Management Plan for Eskdale Reserve', 1992

"While the Domain has not been intensively used over the years, its uses have been diverse and mostly of a forestry/horticulture and passive recreation nature. Even more diverse have been the numerous proposals for the land which, to the relief of today's benefactors of this vast open space, mostly remained ideas. Some of the proposals have included a golf course, marae, bowling club, Olympic swimming pool, football fields, hockey fields, bee keeping, plastic ski slope, park and ride facility, rugby union and RSA facilities...

1900s In common with much of the cutover Kauri forest of the North Shore, the early use of the Domain was for gum-digging. Around 1900 the Domain Board had advertised the possible granting of gum-digging rights. It appears that subsequently gum was dug in the Domain, but without the Board's permission.

1930s Extensive milling occurred in the Domain during the depression year. Also around this time, the first of at least two proposals for a golf course at the Domain was considered, but not pursued. Following milling, portions of the Domain were leased for grazing, market gardening and bulb growing. These leases were generally short-term leases and continued into the 1970's.

1959 The Birkenhead Council contemplated disposing of the Domain land for housing, in exchange for bush land in the vicinity, and produced subdivision plan (Deposited Plan 29257).

1967 (Golf Course) Developers submitted proposals for the development of the Domain as a golf course. The proposal was very elaborate and was to include many facilities. The Birkenhead Borough Council and the Land and Survey Department were supportive of the scheme. However the Auckland District Golf Association submitted that the site was not suitable for a golf course and the developer withdrew his proposal.

1970s (Bowling club) The Birkenhead Bowling Club enlisted the assistance of the Birkenhead Borough Council in finding a new site for its bowling greens, as the existing facilities at Mokoia Rd were no longer adequate. A site on the Glenfield Rd frontage of the Domain was considered satisfactory and the Domain Board agreed to grant a lease to the club for 33 years in respect of this site. The Minister of Lands consented to the granting of the lease for the erection of a building and laying out of bowling greens, effective from 1 April 1974. As the site was situated in Takapuna City, planning requirements were to be dealt with by the Takapuna City Council.

1972 Pony Club On 13 September, the Birkenhead Borough Council granted a tenancy of the Domain to the Waitemata District Pony Club. This agreement was in the nature of an informal and unregistered lease. The agreement covered all the land in the Birkenhead Domain excluding the cemetery, and included authority to use the undeveloped portion of the Domain for Pony tracks to run from 1 September 72, at a rental of \$1.00 per week, renewable annually.

1974 In December a meeting of both the Birkenhead Borough and Takapuna City Councils was held. Discussion followed from which it emerged there was disagreement over whether the Domain should be developed for a nature park (see below), and proffered this passive type of use whereas the Birkenhead Council favoured some active use.

1975 Nature Park In April the Takapuna City Council adopted the 'Eskdale Nature Park' concept. This concept involved Eskdale Bush Reserve and the Birkenhead Domain being developed as a natural park area. The overall philosophy of the park was to give to people the feeling of isolation in nature. The concept included provision of a nature centre, carpark, trails, picnic areas, informal game areas, play areas, aviary, toilets, caretaker residence and an equestrian area.

1976 In August the Birkenhead Domain Board applied for a specified departure from the Takapuna City Council's Operative District Scheme to permit the erection of the clubrooms and development of the bowling green. The Hearing Committee of Takapuna City Council refused the application in December 1976. An appeal to the Town and Country Planning Appeal Board by the Domain Board in respect of the decision was made shortly after, and in September 1977 the appeal was granted thereby allowing the construction of the clubhouse and bowling greens.

1978 The Bowling Club advised that it did not intend to proceed at that time because of financial constraints but wished to retain its lease. In April 1982 the Department of Lands and Survey contacted the Bowling Club. It advised that the club surrender its lease.

1980 Marae In 1980 the North Shore Maori Committee applied to the Takapuna City Council for a long term lease of the Birkenhead Domain for use as a regional marae. The proposed site was that occupied by the Pony Club on the northern side of Eskdale Road. Council approved in principle the siting of the marae at Birkenhead Domain. It also requested that a draft management plan be produced incorporating the marae proposal in order to canvass public opinion on the proposal. In 1980 Pepper Dixon Architects produced a concept for the marae."

1980s Some work has been carried out to implement the Eskdale Nature Park. In 1982 under the PEP labour scheme, a work program was undertaken to clear weeds, clear and metal walking tracks and bridge streams. Then 1989, council endorsed the development of walkways through the park in association with the NZ Walkways Commission.

1992 In September 1992 Council's Community Services Committee approved a licence for reserve land to the Chelsea Pony Club branch of the Waitemata District Pony Club for a two year period with a two year right of renewal. Council is currently negotiating a lease agreement with the club for use of the reserve. Following the completion of classifications, Council will have the authority to grant a lease to the club.

SECTION 3 **SPATIAL REQUIREMENTS**

“Against [a] tide of sameness we advance the principle ‘respect diversity’. By this we mean to include not only biodiversity but also diversity of place and of culture, or desire and need, the uniquely human element. How can a factory built in a desert climate be delightfully different from one constructed in the tropics? What does it mean to be Balinese, to be Mexican, and to express it? How can we enrich local species, and invite them into our ‘cultivated’ landscapes instead of destroying or chasing them away? How can we gain profit and pleasure from a diversity of natural energy flows? How can we engage with an abundance of diverse materials, options, and responses, of creative and elegant solutions?”

McDonough and Braungart, *Cradle to Cradle* (2002), p120

Working Space *Minimum requirement*

Sheltered nursery spaces, 140m²
Tool shed 25m²
Material dump with vehicle access 80m²

Public Interface *Minimum requirement*

Kitchen 25m²
Gallery and cafe (or similar) 100m²
Public toilets 25m²

The Kaipatiki Project Environment Centre will house larger-scale and more diverse operations than the current facilities. Designs for the Centre should take an inventive approach, and explore new ways for the Kaipatiki Project to fulfil its goals (*See Section 1*).

Minimum requirements are listed below for guidance. However, these are not to be taken as a final or complete programme. A proposal based only on the minimum requirements is likely to fall short of the vision required.

Sustainability

The KPEC must make sustainability visible, and encourage people to take sustainable practices and an awareness of local ecology home with them. KPEC should be a flagship site for sustainable design and behaviour.

Although it is likely that the council will require connection to city infrastructure, possibilities for going off-the-grid should be explored. Mitigating groundwater, collecting rainwater, and using greywater should be considered. Other strategies like green roofs, passive solar heating, natural light and ventilation, energy generation, building lifespan, and sustainable material choices should be considered. The

Working space

The core of the Kaipatiki Project's programmes is their growing and planting work. Increased space will be needed for this, including sheltered or semi-sheltered nursery space and storage areas. More working space may be needed depending on the scale of anticipated operations.

Public interface

The KPEC will act as a gateway to the local network of reserves. It needs to create an inviting interface with the public that encourages engagement with the programmes and people of the Kaipatiki Project and the native bush of the reserve. This interface could include a cafe or shop, teaching kitchens for cooking home-

grown vegetables, a theatre, gallery, presentation space, function room, or other appropriate spaces.

Vehicle Access

Vehicle access is needed on the site for Kaipatiki project vehicles, light truck deliveries. Public carparking is available along Glenfield Road. On-site parking is to be avoided because it would occupy a large area of the reserve, encourage driving instead of public transport, and make the entrance to the reserve car-focused instead of people-focused. Bus-stops connect to Albany, Glenfield, Takapuna, and Midtown.

Teaching space

The KPEC will host groups of various sizes, from groups of 5-20 volunteers working at seeding and planting, to school groups of up to 40, and community groups as large as 70. Flexibility in meeting-spaces is desired. Outdoor meeting spaces like camp-fire circles or terraced seating could be included.

Office space

Collaboration and teamwork should be emphasised in office spaces. Currently most staff are part-time, but more full-time staff are to be expected with the new facility. Additional office space could be provided for other sympathetic community groups to use. How could the KEPC provide a collaborative hub for these groups?

Outdoor spaces

The design of the Centre includes the design of the outdoor spaces. Elements of the programme may take place outside. Connection to the outdoor environment is essential. Outdoor spaces are not be treated as leftover space!

Vehicle Access *Minimum requirement*

*Garaging for ute, trailer, and two quad-bikes, 60m²
Driveway access for a light truck to drop off materials.*

Teaching Space *Minimum requirement*

*Meeting room 30m²
Classroom 100m²*

Office Space *Minimum requirement*

*Three shared offices for three people, each 15m²
Manager's office 10m²
Staff toilets, 25m²*

Outdoor Space *Minimum requirement*

Outdoor gathering space, 50m²

SECTION 4 **DESIGN PRECEDENTS**



Zealandia Sanctuary, Karori (Visitor Centre, JASMAX, 2010)

Wildlife reserve close to central Wellington (225 hectares) / possible model for Kaipatiki project development / architecture, landscape and exhibition design / close connection to urban environment / integration of historical water catchment dam.



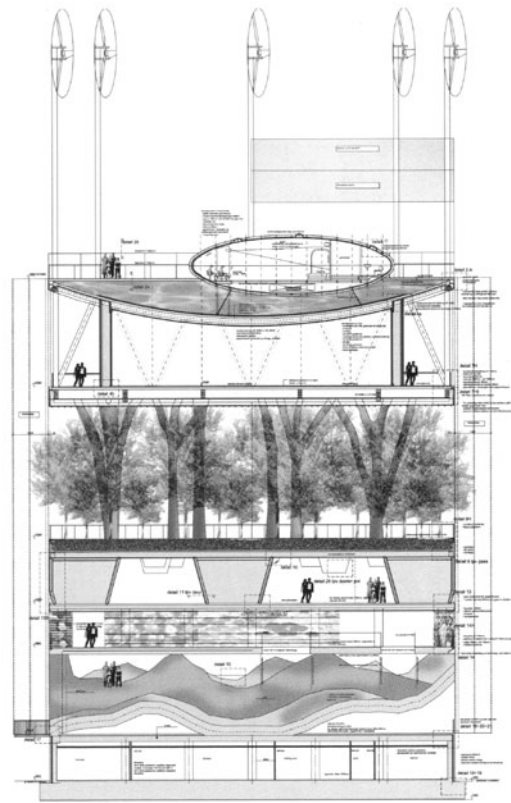


FIG. 03 Building section, MVRDV, Dutch Pavilion, Expo 2000, Hannover, Germany, 2000

MVRDV Dutch Pavilion Hanover 2000

Expo pavilion / Vertical stack of artificial ecologies (Water, Rain, Forest, Oyster, Agriculture, Grotto) expressing the cycling of energy, people, and other living and nonliving matter / Synthetic landscape.

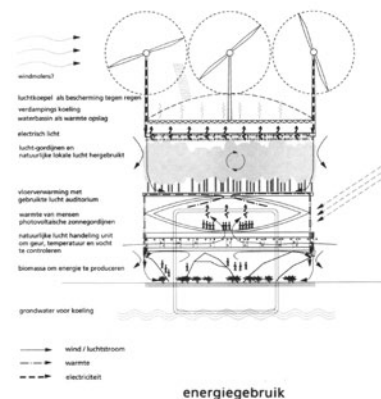
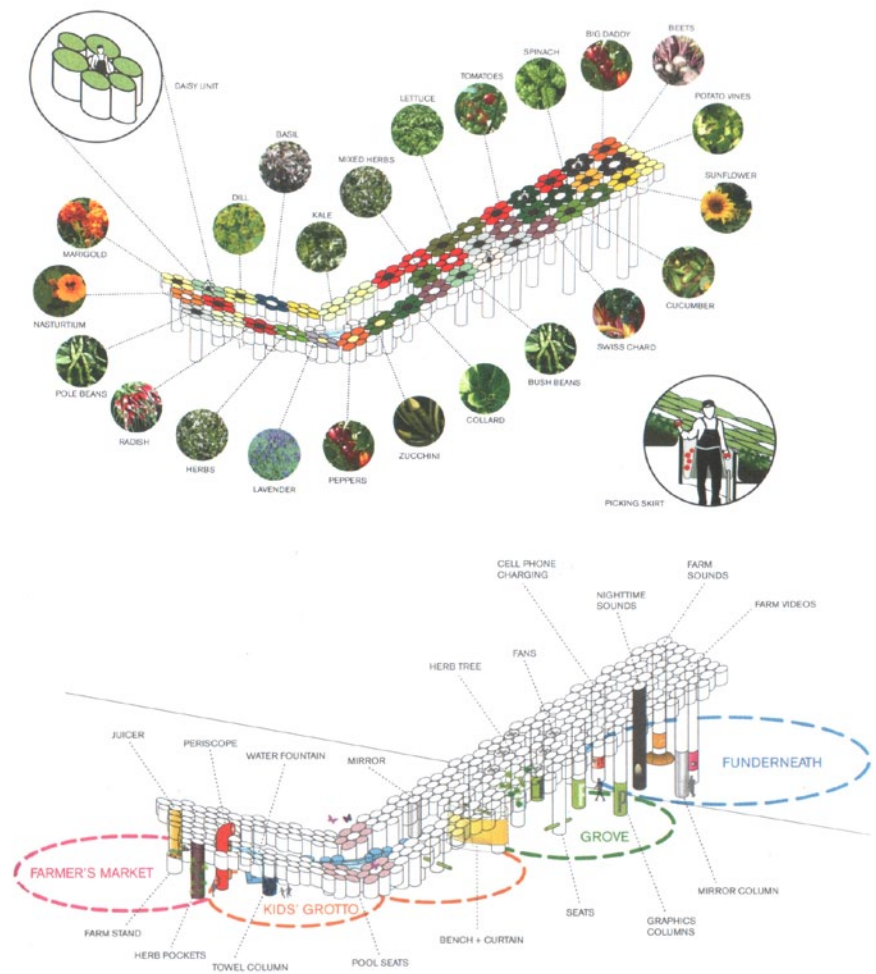


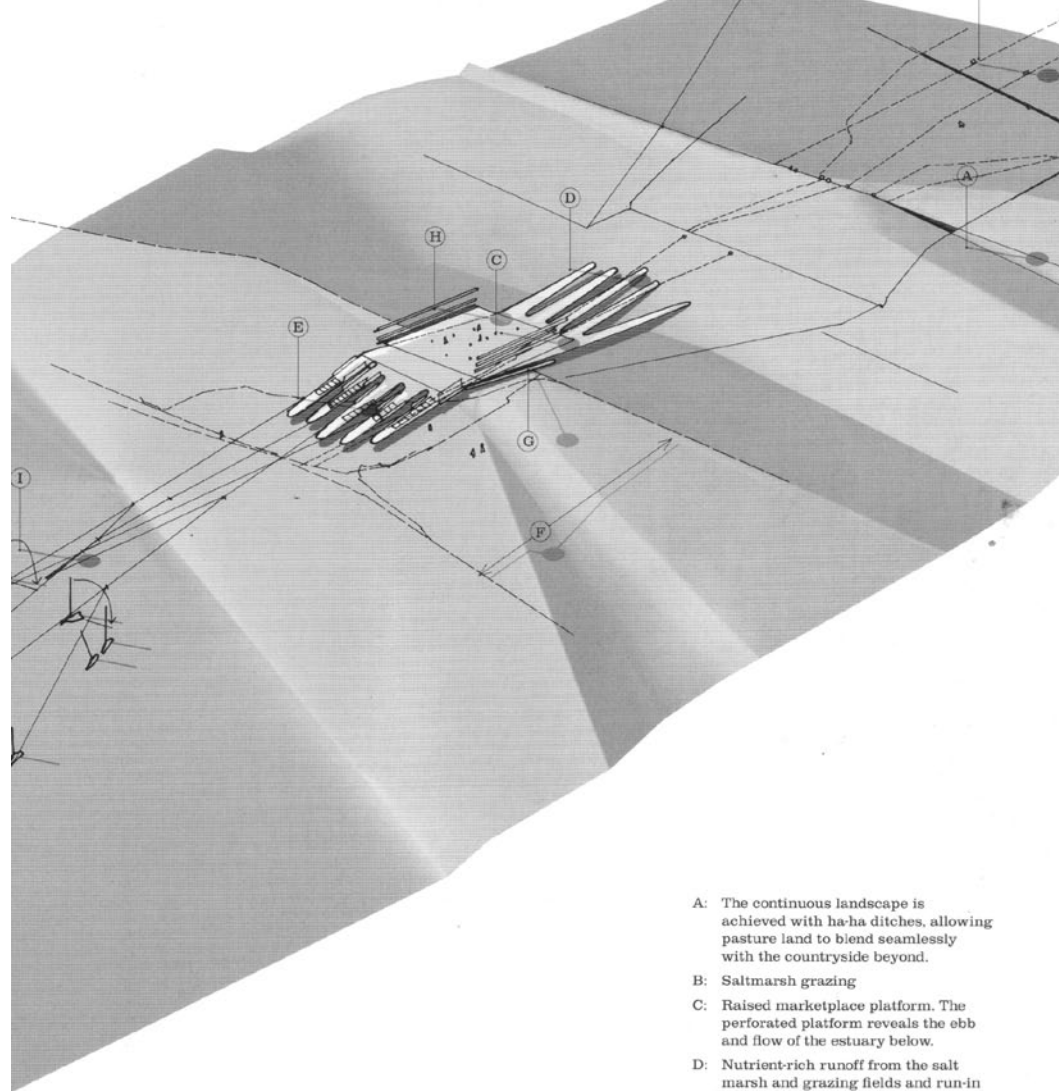
FIG. 04 Energy flow diagram, MVRDV, Dutch Pavilion, Expo 2000, Hannover, Germany, 2000





WORKac **Public Farm 1** P.S.1 Gallery, 2008

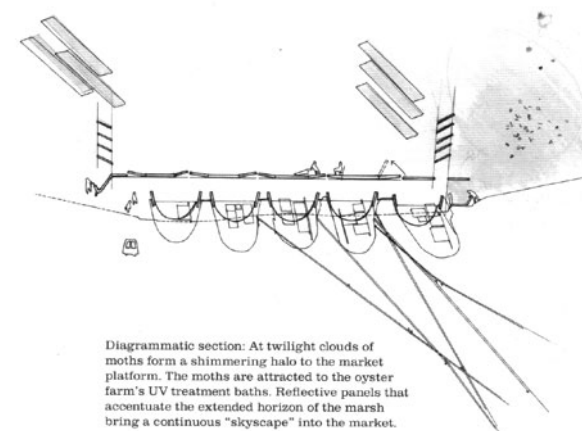
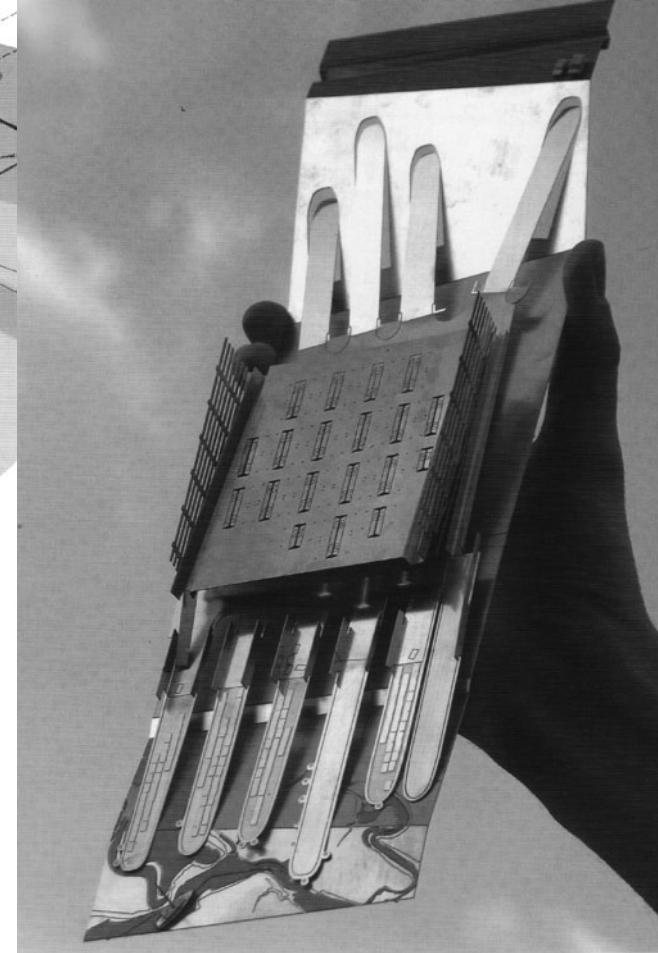
Temporary Urban Farm prototype / farm-bridge 'mini-megastructure' / standardised modular construction / power-generation and water-collection / low-tech cheap materials / selection of plants based on growing conditions / experiential programme integrated with practical requirements.



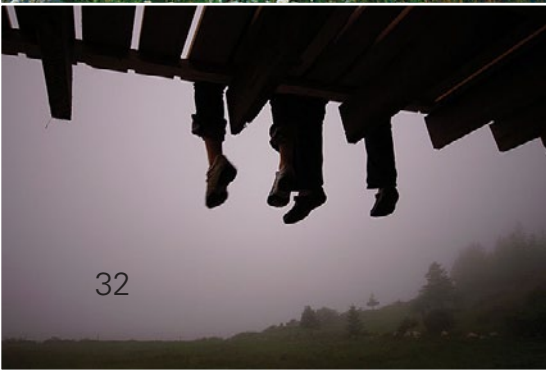
- A: The continuous landscape is achieved with ha-ha ditches, allowing pasture land to blend seamlessly with the countryside beyond.
- B: Saltmarsh grazing
- C: Raised marketplace platform. The perforated platform reveals the ebb and flow of the estuary below.
- D: Nutrient-rich runoff from the salt marsh and grazing fields and run-in of brackish water feeds oysters in lanes of the intertidal zone.
- E: Oyster runnels
- F: Intertidal zone
- G: UV cleansing bath
- H: Reflective panels
- I: Moorings

Smout Allen **Marsh Market** Essex, 2007

Unbuilt project / local environmental conditions, flora, fauna, and climate drawn in to generate site-specific effects / site treated as holistic spatial problem.



Diagrammatic section: At twilight clouds of moths form a shimmering halo to the market platform. The moths are attracted to the oyster farm's UV treatment baths. Reflective panels that accentuate the extended horizon of the marsh bring a continuous "skyscape" into the market.



Bryan Mackay-Lyons **Ghost Lab** Nova Scotia, 1994–2011

Test-structures in response to local environment and traditions of building / elegant and refined use of upolished lightweight timber.



R&Sie(n) **Lost in Paris House** Paris, 2008

Blown-glass incubators allow house to be buried in foliage / environmental control through hybridisation of building skin and garden / simple building form articulated in detail at skin.



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